

WHAT IS CLAIMED IS:

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1. A switch operable under a predetermined condition comprising;

a plurality of switch parts each including a pair of reed pieces; and

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a connecting member of an electrically conductive non-magnetic material via which said plurality of switch parts are serially connected, wherein said switch operates only under a

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parts are operated by external magnetic fields individually and simultaneously acting on said plurality of switch parts.

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2. The switch as claimed in claim 1, wherein said plurality of switch parts includes pole pieces provided on said reed pieces, said pole  
25 pieces determining positions where magnetic flux enters and leaves said reed pieces.

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3. A switch operable under a predetermined condition comprising:

a switch part including a pair of reed pieces; and

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a yoke-magnet assembly generating a magnetic field that produces a magnetic pole at a tip of one of said pair of reed pieces such that

said tip is magnetically attracted toward said yoke-magnet assembly and separated away from the other one of said pair of reed pieces, said yoke-magnet assembly being provided at a position opposing said switch part,

wherein said switch operates only under a condition where said reed pieces of said switch part come into contact with each other by an external magnetic field producing an opposite magnetic pole at said tip.

4. The switch as claimed in claim 3, wherein said switch part further includes pole pieces provided on said reed pieces, said pole pieces determining positions where magnetic flux enters and leaves said reed pieces.

5. A switch operable under a predetermined condition comprising:

a plurality of switch parts each including a pair of reed pieces;

a connecting member made of an electrically conductive non-magnetic material via which said plurality of switch parts are serially connected; and

a plurality of yoke-magnet assemblies generating magnetic fields that produce magnetic poles at tips of one of each said pair of reed pieces such that said tips are magnetically attracted toward said yoke-magnet assemblies and separated away from the other one of each said pair

of reed pieces, respectively, said yoke-magnet assemblies being provided at positions opposing said switch parts,

- 5 wherein said switch operates only under a condition where each said pair of reed pieces of said switch parts come into contact with each other, respectively, by external magnetic fields producing magnetic poles of opposite polarities at said tips.

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6. The switch as claimed in claim 5, wherein said plurality of yoke-magnet assemblies  
15 have the same polarity at positions opposing the tips of one of each said pair of reed pieces for all said switch parts.

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7. The switch as claimed in claim 5, wherein said plurality of yoke-magnet assemblies have different polarities at positions opposing the  
25 tips of one of each said pair of reed pieces for individual said switch parts.

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8. A switch operable under a predetermined condition comprising:

a first and a second switch part, each said switch part including a pair of reed pieces;  
35 and

a connecting member of an electrically conductive non-magnetic material via which said

first and second switch parts are serially connected; and

terminal members provided at both ends of said switch,

5 wherein said switch operates only under a condition where said first and second switch parts are operated by predetermined external magnetic fields individually and simultaneously acting on each of said first and second switch parts,

10 wherein said connecting member and said terminal members have different thicknesses and are embedded in a mold base main body, base parts of said reed pieces being attached to said connecting member and said terminal members.

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9. The switch as claimed in claim 8,  
20 wherein said connecting member and said terminal members are made from different parts with different thicknesses that are parts of a plate member that is insert-molded in said mold base main body.

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10. A switch operable under a predetermined condition comprising:

30 a first and a second switch part, each said switch part including a pair of reed pieces; and

a connecting member of an electrically conductive non-magnetic material via which said  
35 first and second switch parts are serially connected; and

terminal members provided at both ends of

said switch,

wherein said switch operates only under a condition where said first and second switch parts are operated by predetermined external magnetic fields individually and simultaneously acting on each of said first and second switch parts,

said switch further comprising a switch assembly including said first and second switch parts and a cover that covers the switch assembly having said first and second switch parts, said cover having a top plate part of a predetermined thickness.

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11. The switch as claimed in claim 10, wherein said first and second switch parts are offset in a direction perpendicular to a longitudinal direction of said first and second switch parts.

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12. A switch operable under a predetermined condition comprising;

at least one reed switch part that is operated by at least one external magnetic field; and

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a yoke-magnet assembly producing a magnetic flux flowing through said reed switch part,

wherein said reed switch part operates only under a condition where at least one external magnetic field acting on said reed switch part is a specific external magnetic field.

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5           13. An external magnetic field generating  
assembly for applying a magnetic field to each of a  
plurality of switch parts of a switch in which first  
and second switch parts each including a pair of  
reed pieces are serially connected via a connecting  
10 member made of an electrically conductive non-  
magnetic material, said external magnetic field  
generating assembly comprising:

          a first magnet generating a magnetic field  
applied to said first switch part; and

15           a second magnet generating a magnetic  
field applied to said second switch part,  
          wherein orientations of magnetic poles of  
said first and second magnets are aligned in a  
direction perpendicular to a longitudinal direction  
20 of said reed pieces.

25           14. The external magnetic field generating  
assembly as claimed in claim 12, polarities of said  
magnetic poles of said first and second magnets  
being oriented in the same sense,

          said external magnetic field generating  
30 assembly further comprising a third magnet provided  
between said first and second magnets, an  
orientation of magnetic poles of said third magnet  
being aligned in a direction perpendicular to a  
longitudinal direction of said reed pieces and  
35 polarities of said magnetic poles of said third  
magnet being oriented in an opposite sense to said  
polarities of said first and second magnets.

5           15. An external magnetic field generating  
assembly for applying a magnetic field to each of a  
plurality of switch parts of a switch in which first  
and second switch parts each including a pair of  
reed pieces are serially connected via a connecting  
10 member made of an electrically conductive non-  
magnetic material, said external magnetic field  
generating assembly comprising:

          a single magnet having magnetic poles of a  
same polarity at portions opposing said first and  
15 second switch parts and a magnetic pole of a  
polarity different from said same polarity at a  
portion opposing a position between said first and  
second switch parts.

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          16. A combination comprising:

          a switch operable under a predetermined  
25 condition, said switch including a plurality of reed  
switch parts and at least one connecting member of  
an electrically conductive non-magnetic material via  
which said plurality of reed switch parts are  
serially connected; and

30           an external magnetic field generating  
assembly generating magnetic fields meeting said  
predetermined conditions for operating said switch.

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          17. A combination comprising:

a switch unit and an external magnetic field generating unit,

said switch unit includes:

5 a switch including a first and a second switch part, each said switch part including a pair of reed pieces; a connecting member of an electrically conductive non-magnetic material via which said first and second switch parts are serially connected; and terminal members provided at  
10 both ends of said switch; and

a magnet being provided between the first and second switch parts, an orientation of magnetic poles of said magnet being aligned in a direction perpendicular to a direction in which said first and  
15 second switch parts are aligned,

said external magnetic field generating unit includes:

a first magnet generating a magnetic field that acts on said first switch part; and  
20 a second magnet generating a magnetic

field that acts on said second switch part,  
an orientation of magnetic poles of said first and second magnets being aligned in a direction perpendicular to a longitudinal direction  
25 of said reed pieces.

30 18. A switch device including a first switch unit and a second switch unit,  
wherein said first switch unit includes a first switch operable under a first predetermined condition and a first magnet field generating means,  
35 said switch including reed switch parts,  
said second switch unit includes a second switch operable under a second predetermined



condition and a second magnet field generating means,  
said switch including reed switch parts,

5           said first and second switch units are  
positioned such that said first magnetic field  
generating means opposes said second switch and said  
first switch opposes said second magnetic field  
generating means.

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19. The switch device as claimed in claim  
18, wherein said first and second switch units have  
the same structure.

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20. The switch device as claimed in claim  
20 18,

          wherein said first switch unit is  
configured such that said first switch includes  
first and second reed switch parts that are serially  
connected via a connecting member that is  
25 electrically conductive non-magnetic and that said  
first magnetic field generating means includes first  
and second magnets,

          said second switch unit is configured such  
that said second switch includes first and second  
30 reed switch parts that are serially connected via a  
connecting member that is electrically conductive  
non-magnetic and that said second magnetic field  
generating means includes first and second magnets,  
and

35           wherein said first and second switch units  
are positioned such that said first and second  
magnets of the first switch unit oppose said first

and second reed switch parts of the second switch unit, respectively, and that said first and second reed switch parts of the first switch unit oppose said first and second magnets of the second switch unit, respectively.

10                   21. The switch device as claimed in claim 18,

                  wherein said first switch unit is configured such that said first switch includes a first and a second reed switch part that are  
15   serially connected via a connecting member that is electrically conductive non-magnetic and said first magnetic field generating means includes a first magnet aligned between said first and second reed switch parts, and

20                   said second switch unit is configured such that said second switch includes a first reed switch part and said second magnetic field generating means includes first and second magnets aligned on either side of said first reed switch part,

25                   wherein said first and second switch units are positioned such that said first and second magnets of the second switch unit oppose said first and second reed switch parts of the first switch unit, respectively, and that said first reed switch  
30   part of the second switch unit opposes said first magnet of the first switch unit.

35                   22. The switch device as claimed in claim 18,

wherein said first switch unit is configured such that said first magnetic field generating means includes a first magnet and said first switch includes first and second reed switch parts that are aligned on one side of said first magnetic field generating means and serially connected via a connecting member that is electrically conductive non-magnetic and, and

said second switch unit is configured such that said second switch includes a first reed switch part and said second magnetic field generating means includes first and second magnets aligned on one side of said first reed switch part,

wherein said first and second switch units are positioned such that said first and second magnets of the second switch unit oppose said first and second reed switch parts of the first switch unit, respectively, and that said first reed switch part of the second switch unit opposes said first magnet of the first switch unit.

23. The switch device as claimed in claim 22,

wherein said first switch unit is configured such that a terminal part of said first reed switch part and a terminal part of said second reed switch part are provided on a back surface side of a mold base supporting said second reed switch part, and

said second switch unit is configured such that a terminal part of said first reed switch part is provided on a back surface side of a mold base supporting said first reed switch part.

24. An electronic apparatus including an  
5 electronic apparatus main body and an attachment  
loaded in said electronic apparatus main body,  
wherein one of said electronic apparatus  
main body and said attachment is provided with a  
switch operable under a predetermined condition,  
10 said switch including a plurality of reed switch  
parts and at least one connecting member of an  
electrically conductive non-magnetic material via  
which said plurality of reed switch parts are  
serially connected, and  
15 the other one of said electronic apparatus  
main body and said attachment is provided with an  
external magnetic field generating assembly  
generating magnetic fields meeting said  
predetermined condition for operating said switch.  
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25. An electronic apparatus including an  
25 electronic apparatus main body and an attachment  
loaded in said electronic apparatus main body,  
wherein said electronic apparatus main  
body includes a first switch operable under a first  
predetermined condition and a first magnetic field  
30 generating means generating magnetic fields meeting  
a second predetermined condition for operating a  
second switch,  
said attachment includes a second switch  
operable under said second predetermined condition  
35 and a second magnetic field generating means  
generating magnetic fields meeting said first  
predetermined condition for operating said first

switch,

wherein said electronic apparatus main body and said attachment configured such that when said attachment is loaded in said electronic apparatus main body, said first magnetic field generating means of said electronic apparatus main body opposes said second switch of said attachment and said first switch of said electronic apparatus main body opposes said second magnetic field generating means.

26. An electronic apparatus including an electronic apparatus main body and an attachment loaded in said electronic apparatus main body, wherein one of said electronic apparatus main body and said attachment is provided with a first switch unit including a first switch operable under a first predetermined condition and a first magnetic field generating means meeting a second predetermined condition for operating a second switch, said first switch including reed switch parts, the other one of said electronic apparatus main body and said attachment is provided with a second switch unit including a second switch operable under a second predetermined condition and a second magnetic field generating means generating magnetic fields meeting said first predetermined condition for operating said first switch, said second switch including reed switch parts,

27. A switch comprising at least one switch part each including reed pieces, said switch part operates by an external magnetic field acting thereon,

- 5                    wherein said switch part operates only under a condition where said external magnetic field is a specific magnetic field.

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